

REMARKS

Claims 1-19 are pending. Claims 1-19 are rejected.

The Abstract is objected to because it contains insufficient description of the invention.

Claim 11 is objected to under CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claims 1, 5-7, 9-12, and 16-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740).

Claims 2-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740) and further in view of Hatsuda et al (6562879).

Claims 7-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740) and further in view of Jewell et al (US Patent Publication 2003/0205342).

Claims 1, 5-8 and 10-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over (renumbered) claims 1-9 and 11-12 of copending Application No. 10/748977.

Claims 1, 5-8, 10-12 and 16-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-8 and 12-13 of copending Application No. 10/815206.

Claims 1-8, 10, and 12-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 10/748969.

Objection to the Abstract

The Examiner has objected to the abstract for containing insufficient description of the invention and has required correction. Applicants have provided a new abstract. Withdrawal of the objection is respectfully requested.

Objection to Claim 11 under 37 CFR 1.75 (c)

Claim 11 is objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of the previous claim. Applicants respectfully disagree. The acyclic polyols referred to in Claims 10 and Claim 11 are a subgenus of the genus polyol cited in Claims 1 and 10. The listed species in Claim 11 are selected from a larger list of species, page 4, line 21- 28. Claim 11 further limits the subgenus acyclic polyol to selection from within the species i.e. group consisting of erythritol, xylitol, arabinitol, ribitol, sorbitol, mannitol, perseitol and volemitol and mixtures thereof. Withdrawal of this objection is respectfully requested.

The Rejection of Claims 1, 5-7, 9-12 and 16-19 Under 35 U.S.C. § 103 (a)

Claims 1,5-7, 9-12, and 16-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740). Withdrawal of this rejection is respectfully requested.

Hansen teaches a method of densifying fibers using organic and inorganic polymeric and non-polymeric densifying agents. Fibers treated with these agents are easily densified by application of pressure, column 1, lines 60-64. The densifying agents in Hansen are binders. The binder has a functional group that is capable of forming hydrogen bonds with the fibers, and a functional group that is also capable of forming a hydrogen bond or coordinate covalent bond with particles that have a hydrogen bonding or coordinate covalent bonding functionality, column 3, lines 55-60. Hansen states that fibers that have high bulk from intrafiber covalent crosslinks are prepared by individualizing the fibers and curing them at an elevated temperature and that initial application of the binder on these fibers preferably occurs *after* the curing step, particularly if the binder is capable of functioning as a crosslinking material, column 34, lines 1-4. Hansen states however, that if the binders such as the polyols, polyaldehydes, polycarboxylic acids and polyamines are present *during curing*, the binder will be consumed during the curing step to form covalently

crosslinked bonds. When this occurs, the binder is no longer available for hydrogen bonding or coordinate covalent bonding and the particle binding to particles is ineffective. Accordingly the Hansen reference teaches away from using a polyol during the curing step since that would result in loss of effectiveness of the binder, the very object Hansen seeks to accomplish.

The Cook reference describes a method for improving the brightness of polycarboxylic acid intrafiber crosslinked fibers. According to Cook, a pulp sheet of cellulosic fibers is contacted with a polycarboxylic acid crosslinking agent, mechanically separated into substantially individual form, the individualized fibers are then dried causing the crosslinking agent to react with the fibers in the presence of a catalyst, (sodium hypophosphite), to form crosslink bonds while the fibers are maintained in substantially individual form. The crosslinked fibers are then contacted with an alkaline solution and an oxidizing agent to reduce the odor and improve brightness to 80 to 86 from 70 to 75, column 9, lines 51-62 and column 3, lines 50-52. Cook does not teach or suggest the use of polyols during the crosslinking reaction to increase brightness.

Hansen teaches away from the invention and Cook does not teach the use of polyols during the crosslinking reaction. Since neither reference fails to teach, suggest or provide any motivation to combine the references to make the crosslinked fibers characterized by a Whiteness Index greater than about 69, the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

The Rejection of Claims 2-4 Under 35 U.S.C. § 103 (a)

Claims 2-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740) and further in view of Hatsuda et al (6562879).

Claims 2-4 depend from Claim 1. Claim 1 has been addressed above.

The Hansen and Cook references have been addressed above.

The Hatsuda et al reference relates to a water absorbent *resin* powder which involves the step of obtaining water absorbent crosslinked polymer particles by an

aqueous solution polymerization step and further grinding the resultant crosslinked polymer particles until the bulk density increases to not lower than 0.72 (g/ml).

The crosslinked polymers include at least one member selected from the group consisting of crosslinked polymers of partially neutralized polyacrylic acids, hydrolyzed products of starch-acrylonitrile grafted polymers, saponified products of starch-acrylic acid grafted polymers, saponified products of vinylacetate-acrylic acid ester copolymers, hydrolyzed products of acrylonitrile or acrylamide copolymers, or their crosslinked polymers, modified products of crosslinked polyvinyl alcohols containing a carboxyl group and crosslinked isobutylene-maleic anhydride copolymers, column 4, lines 56-66.

Monomers used to give the crosslinked polymers include, for example, acrylic acid and its salts, methacrylic acid, maleic acid vinylsulfonic acid, styrenesulfonic acid and numerous others, column 5, line 30-54. Internal crosslinking agents are also used, column 6, line 61-column 7, line 7. Surface - crosslinking agents used in the invention are given in column 10, line 58-column 11, line 33.

The arbitrarily pulverized water-absorbent resin powder has an L value of preferably not lower than 85 in lightness, an a value preferably in the range of +/- 2 and a b value preferably in the range of 0-9 both in chromaticity as measured by a devise such as a spectroscopic color difference meter, column 16, line 7-12.

Applicants submit the reference is from nonanalogous art. The Hatsuda et al reference relates to a process for making water absorbent resin powders, the instant invention relates to crosslinked fibers. Furthermore there is nothing in the Hatsuda et al reference that would suggest or teach a combination of the Hansen and Cook references would arrive at the claimed invention. Withdrawal of the rejection is respectfully requested.

The Rejection Of Claims 7-9 Under 35 U.S.C. § 103 (a)

Claims 7-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740) and further in view of Jewell et al (US Patent Publication 2003/0205342).

Claims 7-9 are dependent from Claim 1. Claim 1 has been addressed above.

Jewell discloses the addition of water-borne binding agents to intrafiber crosslinked fiber and incorporating this material into one or more plies of a multi-ply structure to produce a material that has a relatively high bulk and relatively high physical strength, paragraph 0012. The preferred types of crosslinking agents are polycarboxylic acids or urea derivatives. Jewell discloses that the preferred polycarboxylic acid crosslinking agents are citric, tartaric, malic, succinic, glutaric acid or citraconic acid, paragraph 0024.

Jewell does not disclose cellulose fibers reacted with a crosslinking agent and a C₄-C₁₂ polyol to form intrafiber crosslinked cellulose fibers characterized by a Whiteness Index greater than about 69. There is no recognition in Jewell of a color deficiency of the fibers and therefore no motivation, teaching or suggestion to combine with the Hansen and Cook references to make the claimed invention.

Hansen teaches away from the claimed invention. Cook does not suggest the use of polyols in the presence C₄-C₁₂ crosslinking agents and Jewell cites citric acid, tartaric acid, malic acid, and others, as crosslinking agents but does not teach the use of polyols to achieve the Whiteness Index of the crosslinked fibers of the invention. Applicants submit there is no suggestion, teaching or motivation to combine the references to arrive at the claimed invention. Withdrawal of the rejection is therefore respectively requested.

The Provisional Obviousness-Type Double Patenting Rejections

Claims 1, 5-8 and 10-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over (renumbered) claims 1-9 and 11-12 of copending Application No. 10/748977.

Claims 1, 5-8, 10-12 and 16-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-8 and 12-13 of copending Application No. 10/815206.

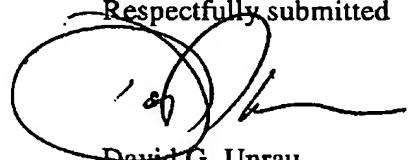
Claims 1-8, 10, and 12-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 10/748969.

Applicants note the provisional double patenting rejections and will file a terminal disclaimer on the Examiner's indication of allowable subject matter in this and one or more of the copending applications.

CONCLUSION

Based on the foregoing, Applicants submit that the application is in condition for allowance and request that it proceed accordingly. If the Examiner has any further questions or comments the Examiner is invited to contact the Applicants' agent.

Respectfully submitted



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